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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LEE, CHEUKFAN	
ART UNIT	**PAPER NUMBER**
2622	2

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/836,176	CHIU, CHUI-KUEI	
	Examiner	Art Unit	
	Cheukfan Lee	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 April 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Claims 1-40 are pending. Claims 1 and 22 are independent.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 4-7, 9, 11, 12, 15, 16, 20, 22, 25-28, 30, 34, 35, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Yamashita et al. (U.S. Patent No. 6,452,149).

Regarding claims 1 and 5, in Applicant's admitted prior art scanner (Fig. 1) (pages 1 and 2 of specification), a scanning head module (13) comprises a light source (16), a housing for housing an optical system (17, 18), a photosensitive detector (19), which inherently include a board or substrate. Applicant's prior art differs from the claimed invention in that the scanning head (13) does not include a processing circuit on the board or substrate for the photosensitive detector (19). The processing circuit (22) included on a main board (22) is disposed outside of the housing of the scanning module (13).

Yamashita et al. teaches integrating an image input section (21) and a signal processing section (22) on a single substrate (SS). The input section (21) includes CMOS type photoelectric converting sensor (a photosensitive detector) and an A/D converter (25). The signal processing section (22) includes a processor(s) for

processing signals from the A/D converter (Figs. 2, 3A, 3B, 4, and 5, col. 3, lines 9-12, col. 4, line 40 – col. 5, line 50, also col. 1, lines 10-25). The invention of Yamashita et al. provides high speed processing of image data (col. 15, lines 40-45) and reduces the size of the input device or, inherently, makes more space available in the scanner by integrating on the substrate of the CMOS sensor the other circuit elements such as the processing circuit and a memory element (col. 1, lines 10-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the idea of Yamashita et al. to include the photosensitive detector and the processing circuit on a main board inside the housing of Applicant's admitted prior art in order to increase signal processing speed and to make space available inside the scanner housing and outside the scanning head module (13) as taught by Yamashita et al.

Regarding claims 22 and 26, see discussion for claims 1 and 5 above. In addition, Applicant's prior art optical system (Fig. 1) includes a set of mirrors (17) and a lens (18) as claimed. In addition to the inclusion of the photosensitive detector (19) and processing unit (22), the obvious main board (22) discussed for claim 1 above includes a memory (25) and an interface control circuit (26 in Fig. 2) each function as claimed.

Regarding claims 4 and 25, see CCD (charge-coupled device 19) of Applicant's prior art (page 1, lines 20-22).

Regarding claims 6 and 27, the kind of scanning head module (13) shown in Applicant's prior art Fig. 1 is considered a contact image sensor (CIS).

Regarding claims 7 and 28, application specific integrated circuit (ASIC) is not a novel and is included in the control circuit (24) of processing unit (22) on the main board of Applicant's prior art (Fig. 1). Based on the reasons of obviousness given for claim 1 above, including the ASIC on the board or substrate inside the scanning head module would have been obvious to one of ordinary skill in the art.

Regarding claims 9 and 30, the processing circuit (22) of Applicant's prior art (Fig. 2) shows that the ASIC (control circuit 24) is connected to the ADC (23) for processing the output from the ADC (23).

Regarding claim 11, see memory (25 in Fig. 2) of Applicant's prior art.

Regarding claim 12, see interface (control circuit 26 in Fig. 2) of Applicant's prior art (page 1, line 28 to page 2, line 9 of the specification).

Regarding claims 15 and 34, see motor control circuit (27 in Fig. 2) of Applicant's prior art.

Regarding claims 16, 20, 35, and 39, the module of Applicant's prior art is movably installed in a scanner.

4. Claims 2, 3, 8, 13, 14, 17-19, 21, 23, 24, 29, 32, 33, 36-38, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view

of Yamashita et al. (U.S. Patent No. 6,452,149) as applied to claims 1 and 22 above, and further in view of known art.

Regarding claims 2, 3, 23, and 24, Applicant does not discuss the kind the light source (19) being light emitting diode (LED) or cold cathode fluorescent lamp (CCFL). However, the examiner took Official Notice of the fact that LED and CCFL are well known light sources employed in the scanning head modules such as Applicant's prior art module, for the reasons that LEDs consume less power and CCFL provides bright illumination. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a light source comprising an LED or a CCFL as the light source in the module of Applicant's prior art in view of Yamashita et al. to reduce power consumption or to provide bright illumination onto the document being scanned.

Regarding claim 8 and 29, Applicant's prior art shown in Fig. 2 comprises the ASIC (24) and ADC (A/D 23), but the figure does not show that the ADC is comprised in the ASIC (24). The examiner took Official Notice of the fact that ASIC comprising an ADC is not a novel but known feature in the art of computer control. The purpose of such inclusion circuitry is to reduce the number of parts or separate circuits within the processing unit. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the ADC in the ASIC of Applicant's prior art in view of Yamashita et al. as is known in the art to reduce the number of separate circuits.

Regarding claims 13, 14, 32, and 33, though Applicant does not specify the type of interface circuit being USB or IEEE 1394 series bus, these interface features are not

novel features. The examiner took Official Notice of the fact that USB and IEEE 1394 series bus are well known buses for interfacing peripheral device with the host computer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ either a USB or an IEEE 1394 series bus in the interface control circuit of Applicant's prior art in view of Yamashita et al. as is known in the art since USB and IEEE 1394 are known to have the capability to increase communication speed between a peripheral device, such as scanner, and the host computer.

Regarding claims 17-19 and 36-38, though Applicant does not specifically disclose that the scanning head module is applied in copying machine, a facsimile machine, or a multi-functional peripheral (MFP), the examiner took Official Notice of the fact that copying machines, facsimile machines and multi-function peripherals do comprise a scanning section. One of ordinary skill in the art would have realized the convenience of employing such a scanning head module as the module of Applicant's prior art, which is its compact size. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the above obvious scanning head module of Applicant's prior art in view of Yamashita et al. to a copying machine, facsimile machine, or a multi-functional peripheral as claimed for the convenience of the module.

Regarding claims 21 and 40, Applicant does not discuss in the prior art discussion of the specification that the scanning module is fastened inside a body of a scanning system, which is understood to be a document-feed type scanning system. However, the examiner took Official Notice of the fact that scanning head modules such

as the module of Applicant's prior art are capable of being used not only as a movable module during scanning but also as document-feed type scanning head module. In the document-feed type scanning system, the scanning system is more compact compared to movable module type scanning system because the scanning bed or document bed is eliminated. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the scanning head module of Applicant's prior art in view of Yamashita et al. on a document-feed type scanning system in such a way that the scanning head module is fastened inside the scanning system so that the module is stationary during scanning.

5. Claims 10 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Yamashita et al. (U.S. Patent No. 6,452,149) as applied to claims 1 and 22 above, and further in view of Murano et al. (U.S. Patent No. 5,617,131).

Regarding claims 10 and 31, neither Applicant nor Yamashita et al. discloses that the board or substrate or main board is formed of polycarbonate.

Murano et al. discloses using material including polycarbonate to form a substrate (2), which supports an image sensor array (3), because of inexpensive cost (col. 4, lines 47-55).

Therefore, in order to reduce the total cost, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ polycarbonate to

form main board of Applicant's prior art in view of Yamashita et al. as taught by Murano et al.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Japanese Patent No. 2002-218185, published Aug. 2, 2002, discloses an image reader and image information processing unit, comprising a single board (15) on which a photoelectric conversion element (12), a timing signal generating circuit, an image processing circuit, and A/D converter circuit, a transfer circuit, and an input output circuit are mounted.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheukfan Lee whose telephone number is (703) 305-4867. The examiner can normally be reached on 9:30 a.m. to 6:00 p.m., Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cheukfan Lee
June 12, 2004

Cheukfan Lee